1. Infundibulum

The funnel-shaped upper portion of the oviduct is the infundibulum. When functional, its length is approximately 3.5 inches (9 cm). Normally inactive except immediately after ovulation, its purpose is to search out and engulf the yolk causing it to enter the oviduct. After ovulation, the yolk drops into the ovarian pocket or the body cavity, from which it is picked up by the infundibulum. The yolk remains in this section for only a short period of about 15 minutes, then is forced along the oviduct by multiple contractions.

Malfunction of the infundibulum. To be completely functional, the infundibulum should pick up all the yolks dropped into the body cavity. However, it has been found that an average of 4% are not drawn into the infundibulum, but remain in the body cavity where they are reabsorbed within a day. The percentage varies with strains of chickens, some of which retain up to 10% of their yolks in the body cavity. Meat-type birds are more often affected than egg-type strains.

Internal layers. Sometimes the infundibulum loses its ability to pick up a high proportion of the yolks, and they accumulate in the body cavity faster than they can be reabsorbed. Such hens are known as "internal layers," although the term does not define the condition well. The abdomen in such layers becomes distended, and the hen stands in an upright position.

2. Magnum

The magnum is the albumen-secreting portion of the oviduct, and is about 13 inches (33 cm) long in the average laying hen. It takes approximately 2 to 3 hours for the developing egg to pass through the magnum.

Albumen. The albumen in an egg is composed of four layers (see *Shell Eggs and Their Nutritional Value*, Chapter 57). The names and percentages are:

Chalazae	2.7%	Dense white	57.3%
Liquid inner white	16.8%	Outer thin white	23.2%

While all four are produced in the magnum, the outer thin white is not completed until water is added in the uterus.

Chalazae. Upon breaking an egg, one notices two twisted cords, known as chalazae, extending from opposite poles of the yolk through the albumen. The chalaziferous albumen is produced when the yolk first enters the magnum, but the twisting to form the two chalazae seems

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to occur much later as the egg rotates in the lower end of the oviduct. Twisted in opposite directions, the chalazae tend to keep the yolk centered in the egg after it is laid.

Liquid inner white. As the developing egg passes through the magnum, only one type of albumen is produced, but the addition of water plus the rotation of the developing egg gives rise to the various layers, one of which is the liquid inner white.

Dense white. The dense white makes up the largest portion of the egg albumen. It contains mucin that tends to hold it together. The amount of thick white generated in the magnum is large, but the breakdown of mucin and the addition of water as the egg moves through the oviduct tend to reduce the amount of thick white while increasing the amount of thin white. At the time the egg is laid, it has about one-third of its original content of thick white, but what remains still comprises over half the albumen in the egg.

Egg quality deterioration. After laying, there is a constant change in the internal contents of the egg. The thick white gradually loses its viscous composition and its volume decreases, while the thin white becomes more watery, and the amount increases. These conditions are affected by holding temperature, relative humidity, time and certain diseases. The increasing amount of thin white is one of the best indicators of the age (freshness) of the egg.

3. *Isthmus*

Next, the developing egg is forced into the isthmus, a relatively short section approximately 4 inches (10 cm) in length, where it remains for about 75 minutes. Here the inner and outer shell membranes are formed in such a manner as to represent the final shape of the egg. The contents at this time do not completely fill the shell membranes, and the egg resembles a sack only partially filled.

The shell membranes are a papery material composed of protein fibers. The inner membrane is laid down first, followed by the outer membrane, which is about three times as thick as the inner membrane. The two membranes are held closely together until the egg is laid; then at the large end of the egg, the two membranes separate to form the air cell. In a small percentage of the eggs, the air cell will form in the small end or on the side.

Air cell is important. When the egg is first laid there is no air cell. However, it soon appears and increases in diameter to about 0.7 inches (1.8 cm). As the egg ages, moisture within the egg evaporates through the shell pores and the air cell increases in diameter and depth. The size of the air cell can be affected by various storage conditions. High surrounding temperature and/or low humidity increase the size of

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